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Infrared Breath - Test Operator's Manual

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INFRARED BREATH TEST OPERATOR'S MANUAL

I. INTRODUCTION

Operating under the influence of alcohol has been a serious problem on our roads and highways since the invention of the automobile. To help combat the problem of drinking and driving, the SAFE ROADS ACT, Act 620 of 1986 was passed by the Massachusetts legislature. The Safe Roads Act created a new structure of fines and punishments for operating under the influence of alcohol. The Safe Roads Act also created the Office of Alcohol Testing within the Department of State Police.

The Office of Alcohol Testing certifies all infrared breath testing instruments and all simulators in the Commonwealth on an annual basis. The Office of Alcohol Testing (OAT) provides solution for the calibration standard analyses portion of each defendant's test and all solutions for periodic testing and annual certification testing of the instruments and simulators.

There are approximately 10,000 certified breath test operators in the Commonwealth. There are over 450 certified infrared breath testing instruments in Massachusetts. There are approximately 25 certified breath test operator instructors who teach new operators about breath testing instruments. There are over 100 recertification instructors who update operators on changes in the law, the program and the instruments being used. Recertification instructors can recertify valid breath test operators for a period of three years.

From 1987 to 1991, at least ten thousand individuals have taken infrared breath tests each year to determine their blood alcohol level. The average BAC (blood alcohol content) of the individuals taking the test has averaged 0.17% annually.

By becoming a certified infrared breath test operator, you will be able to administer breath tests on any certified infrared breath testing instrument in the Commonwealth in accordance with promulgated regulations. The test results you obtain as a certified operator will be used to suspend licenses or the right to operate in the Commonwealth. The test results may also be used in criminal proceedings resulting from the arrest.

II. ALCOHOL

A. DEFINITION OF ALCOHOL

Alcohol refers to a group of compounds which all contain carbon, hydrogen and oxygen. All alcohols are organic compounds. Because alcohols are organic compounds, they can be detected with infrared technology.

ALCOHOL= ORGANIC= CARBON, HYDROGEN AND OXYGEN

B. TYPES OF ALCOHOL

There are many different alcohols. Ethanol is the most commonly known alcohol. Ethanol is the type of alcohol an individual will

normally ingest. Ethanol, ethyl alcohol, grain alcohol and EtOH are all interchangeable names.

Methanol is another type of alcohol that is sometimes ingested. Methanol, methyl alcohol, wood alcohol and MeOH are interchangeable names.

Many other types of alcohol are commonly found in our homes. Isopropyl alcohol is commonly known as rubbing alcohol. Ethylene glycol is commonly known as antifreeze. Butyl alcohol is present in after shave lotion. Mouth washes, cough syrups, breath fresheners and medications can contain ethyl alcohol. Denatured alcohol is ethyl alcohol plus a poison (denaturant).

ETHANOL= TYPE OF ALCOHOL A PERSON NORMALLY DRINKS

Ethyl alcohol is also widely used in industry as a solvent. To prevent consumption of industrial ethyl alcohol is not consumed, a denaturant is added. If an individual drinks denatured alcohol, the person would become sick from the denaturant. Ingestion of denatured alcohol can be fatal. The Federal Government has a list of approved denaturants that may be added to ethanol. Methanol, isopropanol, toluene, and benzene are all legal denaturants.

Common

Alcohol

Name	Formula	Uses	Metabolite	Toxic Level Blood	Lethal Level Blood
methanol	CH ₃ OH	denaturant fuel (Sterno) gas additive solvent	formic Acid	0.02%	0.09% approx. 1 - 3 ounces internally
ethanol	C ₂ H ₅ OH	beverage solvent medicinal solvent fuel	acetaldehyde to acetic acid	—	0.40% approx. 10 - 16 ounces internally
isopropanol	CH ₃ CH OH 1 CH ₃	Antiseptic Denaturant	Acetone	0.15%	— approx. 4 - 8 ounces internally
ethylene glycol	CH ₂ OH 1 CH ₂ OH	engine coolant solvent	oxalic acid	0.15%	0.02 - 0.24% approx. 3 - 5 ounces internally

C. PROPERTIES OF ETHANOL

Ethanol is a clear, colorless liquid. In the remainder of the manual, the term alcohol will be substituted for ethanol. In the concentrated state, (200 proof or 100%), it has a slight odor. Alcohol has no odor at the concentrations in which it can be legally purchased for ingestion. It is the congeners, flavorings and colorings, which give the alcoholic beverage a particular odor. A glass of wine does not smell like a can of beer or a shot of scotch. The wine, beer and scotch contain the same alcohol, ethanol. The alcoholic beverage has a unique odor, not the alcohol that is found within that beverage.

Alcohol mixes with water. When you pour vodka into cranberry juice, the vodka doesn't float on top of the juice, nor does it sink to the bottom of the juice. The alcohol mixes with the water in the beverage.

It cannot be stated that an open container of a beverage contains alcohol unless it is specifically analyzed for the ethanol. It can be stated that an open container has an odor of a particular alcoholic beverage known to you because of your training and experience.

ALCOHOL= CLEAR, COLORLESS LIQUID, MIXES WITH WATER, NO ODOR

III. ALCOHOLIC BEVERAGES

A. PROOF SYSTEM

The proof system is used in the United States to indicate the amount of ethanol present in distilled beverages. Proof equals twice the percent of ethanol found in the distilled beverage.

PROOF= 2 X %ETOH

EXAMPLE: A bottle of Vodka is labeled 80 proof. How much alcohol is present in the Vodka?

ANSWER: 40% of the contents of the Vodka bottle is pure ethanol(100% Ethanol). The other 60% of the contents of the Vodka bottle is water, flavorings, colorings.

EXAMPLE: If the bottle of Vodka contains 100ml of 80 proof Vodka, how many milliliters are ethanol?

ANSWER: 40% of the bottle contains EtOH, 60% contains water, flavorings and colorings. If the bottle contains 100 ml, 40 ml would be pure EtOH, 60 ml would be water flavorings or colorings.

B. ONE DRINK

One drink can be defined as one 12 ounce beer containing 5% EtOH; one six ounce glass of wine containing 10% EtOH; or one shot of 86 proof distilled spirits. (one shot= 1.5 ounces). If a 150 pound man ingested "one drink", he would have a blood alcohol level of approximately 0.02%. This is a generalized rule. Blood alcohol levels are dependent upon the water content of a person's body. A one drink BAC level can vary from as low as a 0.01% to as high as a 0.05%.

ONE DRINK= ONE BEER= ONE SHOT= ONE GLASS OF WINE= 0.02%
150 LB. MAN

If two women, one weighing 100 pounds, the other 200 pounds were to ingest the same amount of alcohol; the 100 pound woman would have a BAC (blood alcohol concentration) twice as high as the 200 pound women.

EXAMPLE: A 90 pound woman, A, and a 180 pound woman, B, each ingest

one ounce of pure alcohol. What would A and B's blood alcohol levels be?

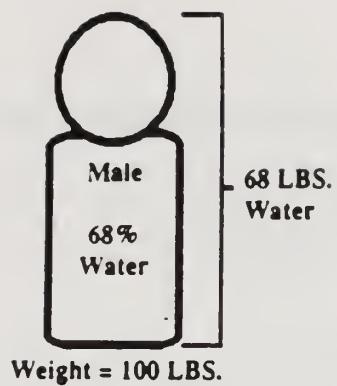
ANSWER: A= 0.04% B= 0.02%

The same relationship would hold true for a comparison between two or more males.

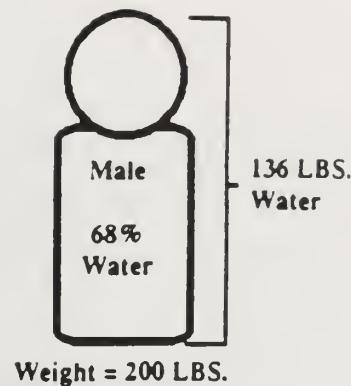
If you were to compare a male and a female BAC, the relationship does not work. Men normally have a higher water content, pound for pound than females. Therefor, the male would have a lower BAC than a female if the both weighed the same and both ingested the same amount of alcohol. This generalization holds only for male and females of average body consistency. Some woman are more muscular and therefore would have a higher water content than the average female, lowering their BAC level below the norm. Some men have more fat tissue than the average male and therefore would have a lower water content, raising their BAC level above the norm.

EXAMPLE: A 150 pound male, A, and a 150 pound female, B, ingest one ounce of pure alcohol. A and B are of normal body consistency(water ratio). What would A and B's BAC level be?

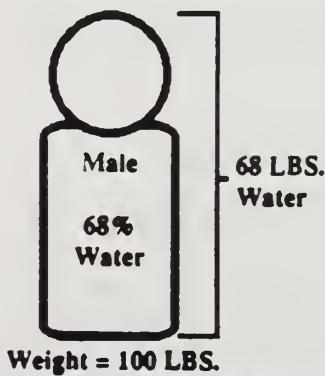
ANSWER: A= 0.02% B=0.03%



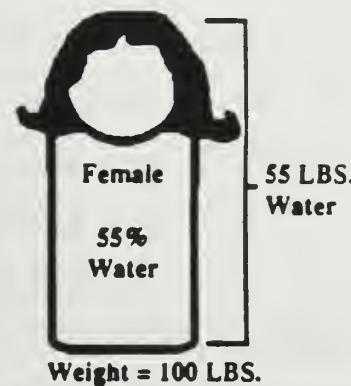
Each Man Consumes
One Fluid Ounce
of Ethyl Alcohol



200 LB. man must consume twice as much as the 100 LB. man to
attain the same alcohol concentration



Each person Consumes
One Fluid Ounce
of Ethyl Alcohol



100 LB. male must consume more alcohol than the 100 LB. female to
attain the same alcohol concentration

IV. DISTRIBUTION AND METABOLISM OF ALCOHOL

A. ABSORPTION AND DISTRIBUTION OF ALCOHOL

Alcohol can be inhaled, injected or ingested. The focus of this course is on alcohol that is ingested.

Absorption of the alcohol begins when the alcoholic beverage is placed in a persons mouth (oral cavity). Some of the alcohol is absorbed in the mouth. Because the alcohol is initially absorbed in the mouth, an observation period for at least 15 minutes by the

breath test operator is mandated by regulation. 501 CMR 2.55. After 10-12 minutes all mouth alcohol is absorbed. Tests given before this 15 minute wait period could be erroneously high due to mouth alcohol. Duplicate testing negates this problem.

The alcohol passes from the mouth into the stomach and then into the small intestines. Most absorption of alcohol takes place in the small intestine.

The rate at which alcohol is absorbed can be effected by the following factors:

1. The amount and nature of the stomach content;
2. The amount of alcohol present in the ingested drink; and
3. The temperature of the body and of the environment.

**GENERAL RULE: ONE DRINK WILL BE ABSORBED IN A 45 TO 60 MINUTE PERIOD
ON AN EMPTY STOMACH.**

The alcohol is distributed to all organs and tissues containing water. Because the alcohol is found in the water content of the body; BAC levels will vary with body weight as well as with water content of the body. The equilibrium between the arterial blood alcohol and the brain alcohol is reached very quickly.

**ABSORPTION= TISSUES AND ORGANS WITH WATER
DISTRIBUTION= PROPORTIONAL TO WATER CONTENT OF EACH ORGAN AND TISSUE**

B. METABOLISM OF ALCOHOL

Once alcohol is ingested and absorbed, the body has a mechanism for eliminating the alcohol from the body. The alcohol can be metabolized, excreted or evaporated.

The liver is the major organ of metabolism. The liver changes (metabolizes) the alcohol to acetaldehyde and then to acetic acid. Over 90% of the alcohol is metabolized by the liver.

Some alcohol is excreted unchanged in the urine. Because the urine contains water, it will contain alcohol. The urine can be tested for the presence of alcohol and can be quantified (find out how much alcohol is present). Some states give defendants a choice of giving a urine sample instead of a blood or breath test.

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NOTE:CDL INFO As breath test operators in the Commonwealth, if a test is conducted, you get to decide what type will be administered. Programs to analyze breath for BAC levels and blood for BAC levels are in place. No program exists to test OUI defendant's urine for alcohol. Under Chapter 90, section F, commonly known as the CDL, the law specifically states an officer has a choice of blood, breath or urine to determine a commercial driver's sobriety.

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A small percentage of the alcohol is simply sweated out of one's body. Sweat contains water. If an individual is drinking alcohol, the sweat would contain alcohol and water. No test has been designed to test sweat for BAC levels.

The remainder of the alcohol is exhaled on the persons breath. Expired air contains moisture(water). If an individual is drinking alcohol, the expired air would contain alcohol and water.

Because expired air contains alcohol, a breath testing instrument can be used to determine the presence of alcohol in a persons breath sample. The amount of alcohol present in the breath sample can be correlated to a blood alcohol level.

MAJOR METABOLISM= LIVER

MINOR METABOLISM= URINE, SWEAT, BREATH

V. BREATH ALCOHOL V. BLOOD ALCOHOL

A. RESPIRATORY SYSTEM

The respiratory system deals with inhaling (inspired) and exhaling (expired) air. The body breathes in nutrients that are present in the air. The nutrients go into air sacs in the lungs and diffuse into the blood system. The lungs eliminate components it no longer use. The lungs diffuse the components into the air sacs and the components are breathed out.

The lungs are composed of numerous air sacs or alveoli. In contact with the alveoli are capillaries. Capillaries carry blood. If a person has ingested alcohol it would be found in the person's blood. The alcohol diffuses from the capillary blood into the alveoli or air sacs. It is then exhaled on the person's breath. This is part of the normal process by which the body eliminates alcohol.

EXAMPLE: A smoker inhales nicotine which passes from the air sacs in the lungs to the blood. Nicotine is easily found in a smoker's blood.

In order to get a true indication of a person's BAC level using a breath sample, the proper type of breath sample must be collected. Only deep lung air, also called alveoli air, would give an accurate indication of a person's blood alcohol. Mixed expired air, air which contains mouth, throat, upper lung and lower lung air would give a lower blood alcohol reading. All certified breath testing instruments in the Commonwealth can distinguish between deep lung air and mixed expired air.

BREATH= WATER AND ALCOHOL

BREATH= DEEP LUNG AIR= ALVEOLI AIR

B. RELATIONSHIP OF BLOOD V. BREATH ALCOHOL

Because a person exhales alcohol on their breath, breath testing instruments could be designed to detect the presence of alcohol in a breath sample. It is not enough to say that the person has been drinking alcohol. It is important to be able to tell how much alcohol is present at the time the person is tested.

Henry's Law makes it possible to quantitate the amount of alcohol in a breath sample and report not breath alcohol, but blood

alcohol. Henry's Law addresses the relationship between a gas and a liquid. In breath testing the gas is deep lung air; the liquid is blood. Henry's Law states that a relationship exists between the amount of alcohol present in the breath and the amount of alcohol present in the blood.

The relationship between the breath and blood never changes. The relationship is independent of how many drinks were consumed; whether the person is male or female; how much the person weighs; how much a person ate; and many other factors. It is possible to state that at 34 degrees centigrade, breath temperature, there will always be 2100 times more alcohol found in the blood than in the breath.

EXAMPLE: Breath alcohol: 0.0001%
Blood alcohol : 0.2100%

EXAMPLE: Breath alcohol: 0.0002%
Blood alcohol : 0.4200%

Because Henry's Law is applicable to breath testing, it was possible to design a machine that tests an individual's breath but reports a person's blood alcohol.

HENRY'S LAW

BLOOD=LIQUID, BREATH=GAS

CAN USE TO TELL HOW MUCH ALCOHOL PRESENT ON BREATH

The 2100:1 ratio was at issue in a landmark case, State v. Townie in New Jersey in 1988. Numerous expert witnesses from around the world, including Dr. Kurt Dubowski testified. Based on Dr. Dubowski's testimony in the New Jersey case and also based on a letter addressed to the New Jersey Attorney General's Office, Dr. Dubowski clarified his breath -blood ratio work.

Dr. Dubowski stated that blood alcohol test results as determined by conversion of a breath sample test using the 2100:1 blood/breath ratio result in:

1. 86% of the blood alcohol results are under reporting venous ethanol levels in the post absorptive stage. (These individuals would have a ratio above 2100:1, example 2300:1);
2. 11.7% of the blood alcohol results would be equal to the breath alcohol result. (These individuals would have a ratio of 2100:1); and
3. 2.3% of the blood alcohol results would be over estimating the individuals blood alcohol. (These individuals would have a ratio below 2100:1, example 1800:1).

The court concluded that the blood/breath ratio was only a mathematical calculation that proved nothing with regard to the reliability of the breath testing instrument. The court affirmed New Jersey's practice of administering two tests which must agree within

0.01 of each other. No new requirements were imposed on the state by the court.

The court further summarized that the 2100:1 ratio is biased in favor of the accused. The reasoning of the court included:

1. Using the 2100:1 ratio will underreport the person's blood alcohol by 9-10% when compared to a venous whole blood sample that is simultaneously drawn.
2. The instrument always truncates the reading, giving the person the benefit of anywhere from a 0.001 to 0.009 being subtracted from their actual BAC level.
3. The lower value of two consecutive readings is used as proof.

These are all valid contentions in Massachusetts.

Many states have taken judicial notice of the Downie case. This is the first time in a number of years that experts from around the world have been summonsed on one case and each testified on their expertise. The scientific community and the court has spoken clearly and convincingly, upholding the analyses of a breath sample to determine an individual's blood alcohol.

2100:1

BLOOD/BREATH RATIO

D. BAC LEVELS

At any given time a persons blood alcohol level can be:

1. Increasing;
2. Decreasing; or
3. Remaining the same.

A breath test operator should never routinely try to estimate a person's BAC level over a given time period. The test results obtained are an accurate indication of the individuals BAC level at the time the test was administered.

The metabolism of alcohol cannot be increased by exercise or the ingestion of stimulants such as coffee (caffeine). The normal rate of metabolism is constant at the rate of 0.015%/hour.

EXAMPLE: A person has a BAC level of 0.20% at midnight. What would their BAC Level be at 6:00 A.M.?

ANSWER: Six hours have passed. Each hour 0.015% is metabolized.

$(6) \times (0.015\%) = 0.090\% \text{ metabolized}$

$0.20\% - 0.09\% = 0.11\%$

At 6:00 A.M. the person would have a BAC of 0.11%

METABOLISM RATE= 0.015% PER HOUR

An individual could appear to be "more intoxicated" than the breath test result indicates. Several conditions could make an individual appear more intoxicated:

1. Diabetes;
2. Epilepsy;
3. Trauma;
4. Drugs when combined with alcohol which add to the effect of the alcohol;
5. Drugs having a synergistic effect; One drink plus one dose of drugs equals an effect greater than two doses of alcohol or drugs.

VI. INFRARED BREATH TESTING INSTRUMENTS

A. DEFINITION OF INFRARED

Infrared is defined as the area of the electromagnetic spectrum between the visible and microwave regions as illustrated in the diagram below.



When light passes through a transparent medium, the light can be absorbed, reflected or transmitted. Infrared spectrophotometry deals with the light that is absorbed in the infrared region of the electromagnetic spectrum (ems). The infrared region of the ems is found between 0.8 and 1000 microns (μ).

Each molecule of ethanol absorbs infrared light at particular wavelengths that are unique to ethanol. No other compound will absorb energy at the same place ethanol does.

B. LAMBERT-BEER'S LAW OF ABSORPTION

Infrared breath testing instruments can be used not only to detect ethanol, but to tell how much ethanol is present in a sample of breath. It is possible to tell how much alcohol is present in a person's breath by using Lambert-Beer's Law of Absorption. Beer's Law states that a relationship exists between light passed through an absorbing material and the amount of light absorbed. This relationship can be measured. The light used in breath testing is infrared light at 3.4μ. The absorbing material is the ethanol molecules present in the deep lung air sample. The amount of light the alcohol molecules absorb is used to calculate the BAC level.

C. INSTRUMENTS

1. BACKGROUND

Scientists have been using infrared instruments for almost 100 years. An infrared "picture" of an organic compound can positively identify the compound to the exclusion of all other compounds.

A fingerprint identifying a person is analogous to an infrared "picture" identifying an organic compound.

Alcohol is an organic compound. Infrared technology can be used to identify alcohol. Not only can infrared be used to identify ethanol; it can also be used to tell how much alcohol is present. This makes infrared technology a valuable tool to law enforcement.

Infrared breath testing instruments have been used by law enforcement since the early 1980's.

Infrared breath testing instruments serve as a confirmation of an officer's probable cause. An officer has reason to believe a person is operating under the influence before the officer places the person under arrest. The test comes after the arrest and only after the defendant has consented to the test.

2. INSTRUMENTS APPROVED IN MASSACHUSETTS

Only instruments on the Department of Transportation National Highway Traffic Safety Administration conforming products list and the Department of State Police Office of Alcohol Testing list of approved instruments can be used to administer evidentiary breath tests in the Commonwealth. Mass. Regs. Code tit. 501 s.2.38 (1992).

The instrument must use infrared technology; analyze deep lung air; analyze known alcohol standards within +/- 0.01 BAC of the known value; print a hard copy of the test results in the order of subject, simulator, subject, including at least two air blanks; and meet any other requirement deemed essential by the Director of the Office of Alcohol Testing and approved by the Secretary of Public Safety.

A list of approved infrared breath testing instruments is included in the addendum of this manual.

3. INFRARED ANALYSIS OF BAC LEVEL

All infrared breath testing instruments in the commonwealth operate on the same basic principles. Each instruments consists of the following components:

1. Breath tube: All instruments have a heated breath tube external to the infrared instrument. The tube is heated to breath temperature. If the breath tube is not heating up, the alcohol present in the breath will condense and collect on the cool surfaces of the breath tube resulting in an erroneously low BAC level.
2. Breath switch and timer: The breath passes over a sensor/switch which uses a combination of pressure, volume and temperature coupled with time to determine the type of breath sample being introduced into the instrument. The instrument is programmed to collect a sample of deep lung air. When the proper parameters are met indicating a deep lung air sample, the instrument will then begin to collect the deep lung air for analyses.
3. Breath chamber: Deep lung air is collected in a breath chamber.
4. Light source and filter: The light source is a light bulb emitting light in the infrared region of the electromagnetic spectrum. The filter serves to differentiate the infrared light. The instrument wants to take a "picture" of the deep lung air. The picture will determine how much infrared light is absorbed by the ethanol molecules present at 3.4 μ . How much light is absorbed by "interferents" at 3.38 microns will also be determined.

The filter chops the infrared light; allowing only light at 3.4 μ and 3.38 μ pass into the breath chamber.

ILLUSTRATION : Picture a wall with two doors, A and B, into a room with no other doors or windows. Imagine the room filled with deep lung air containing ethanol molecules. Picture a spot light outside the room shining constantly on the wall with door A and B. When the doors are closed, no light can penetrate the wall and get into the room. Open door A. It allows some light in (imagine 3.4 μ). Close door A. Open door B. It allows some light in . (imaging 3.38 μ). Now close door B. Repeat this sequence over and over. This is analogous to the infrared light being chopped by a filter. It allows only light at certain wavelengths into the breath chamber.

5. DETECTOR

If alcohol molecules are present in the breath chamber they will absorb some of the infrared light. The amount of light absorbed by the ethanol molecules can be measured. The amount of light absorbed is measured by a photodetector.

ILLUSTRATION : A. You go to the beach. Your body absorbs UV rays,(light in the ultraviolet region of the ems). Your body can get hot ; can sunburn; or can tan by absorbing the UV light. B. You place food in a microwave oven. The food absorbs microwaves and gets hot. (light in the microwave region of the ems).

6. PROCESSOR

The processor is the brain of the infrared breath testing instrument. The microprocessor can take the amount of light absorbed and convert it to a BAC level.

7. PRINTER

The printer takes all the information from the microprocessor and puts the information in a printed format. The printed format can be a ticket, or a paper strip, depending upon the instrument in use.

D. SIMULATORS

1. DEFINITION

A simulator is a device which simulates a person blowing into a breath testing instrument. The simulator is external to the breath testing instrument. (See addendum). All evidentiary tests given in Massachusetts include a simulator test. The simulator confirms that the instrument can properly quantitate alcohol on a person's breath in contemporaneous to the actual test.

A simulator consists of a jar which contains simulator solution. Simulator solution is water containing a known amount of alcohol. All simulator solution is supplied by the Office of Alcohol Testing on an on need basis. The second component of the simulator is the top which screws onto the jar. The top of the simulator contains a heating element, a paddle wheel, a bubble tube, and an inlet and an outlet opening.

The heating element, which extends into the simulator solution warms the solution to breath temperature, 34 C. The paddle wheel mixes the alcohol/water solution to evenly distribute the heat and to prevent overheating of the solution. The bubbler acts to agitate the simulator solution.

Due to Henry's Law the alcohol in the water (blood/liquid) will produce a vapor of alcohol in the air (deep lung air/gas) that will remain constant.

The breath testing instrument will draw the vapor off the top of the simulator solution. The vapor will be placed in the breath chamber and tested as if it were a person's breath sample.

All simulator solution in Massachusetts has a value of 0.15%. If the instrument reads 0.14%, 0.15%, or 0.16% when it tests the simulator solution, it indicates that the instrument and simulator are operating properly.

If a result other than 0.14%, 0.15%, or 0.16% is obtained, the officer must give the person the opportunity to take a new breath test. 501 CMR 2.56.

Many times if the officer fails to turn the simulator on, (resulting in a 0.07% reading); or does not wait for the solution to warm up, a result other than 0.14%, 0.15%, or 0.16% will result. After waiting for the simulator to be at proper temperature, the officer will then be able to administer a valid test.

2. TYPES OF SIMULATORS

There are several types of simulators in use in the Commonwealth.

A. SMITH & WESSON MARK IIA

The Smith & Wesson Mark IIA is a green topped simulator with a glass jar. It contains a straight thermometer to visible check the temperature of the solution. It also has a small orange light on the top that is on when it is heating up. When the solution is at proper temperature, the light goes out.

B. GUTH

The Guth simulator has a large, heavy silver top and a glass jar. It can have a straight thermometer and/or a dial thermometer. It has a small light on the side of the jar to indicate the power is on. It has a second small light that is on when the solution is being heated. Once the solution is up to temperature, the light goes off.

C. TOXITEST

The Toxitest simulator consists of a lexan jar and a black screw top with stabilizing legs. It has a bent thermometer to check the temperature. No light is on when the simulator is heating up. The light comes on when the simulator is as proper temperature.

D. LUCKEY

The Luckey simulator consists of a silver top and a glass jar. It has a dial thermometer on the top. It has a small power light indicating the power is on. It has a second light indicating the simulator is heating up. When the simulator has reached proper temperature, the light will go out.

E. PROTECTION DEVICE

The Protection Device simulator has a black top and a glass jar.

It has a small light that indicates the simulator solution is being heated. When the solution is at temperature, the light goes off. The simulator has a straight thermometer which visible indicates when the solution is at 34 C.

E. BREATH TESTING AND THE OFFICE OF ALCOHOL TESTING

The Department of State Police Office of Alcohol Testing (OAT) is responsible for all evidentiary breath testing in the Commonwealth. The office consists of a full time Director and part time Assistant Director.

All instruments used to perform evidentiary breath test must be certified annual by OAT. 501 CMR 2.39 (1992).

All breath test operators must be certified by the Massachusetts Criminal Justice Training Council (MCJTC) to perform evidentiary breath tests in the Commonwealth. 501 CMR 2.22 (1992).

All breath test operators must be recertified by the MCJTC every three years. 501 CMR 2.25 (1992).

All simulator solution used in the Commonwealth must be provided by OAT. 501 CMR 2.43 (1992).

All evidentiary breath tests given in the Commonwealth must be given using the appropriate Operational Procedure Checklist. 501 CMR 2.56 (1992).

All evidentiary breath test results shall be recorded by the breath test operator in the maintenance and use log. 501 CMR 2.51, 2.57 (1992).

All evidentiary breath test results shall be submitted to OAT via Criminal Justice Information System, CJIS, using the preformatted AM BT screen. 501 CMR 2.47 (1992), Mass. Gen L. ch 90, s 14 k.

The Office of Alcohol Testing administers the periodic testing program, 501 CMR 2.41 (1992); approves all instrument repair personnel, 501 CMR 2.53; oversees all officers in charge (OIC) of

breath testing equipment, 501 CMR 2.54 and conducts all court ordered testing, 501 CMR 2.37.

The Director and Assistant Director provide expert witness services, whenever possible, if the request is made by the Attorney General's office or the District Attorney's offices. 5012 CMR 2.37(2) (1992).

VII. RESPONSIBILITIES OF THE BREATH TEST OPERATOR

A. PREPARING THE INSTRUMENT AND SIMULATOR FOR A TEST

1. Turn instrument on and simulator on.
2. Make sure there is no mouthpiece on the end of the blow tube to inhibited the flow of room air.
3. Prepare the top of the operational procedure checklist.
4. Have a mouthpiece and test ticket ready.
5. Check to see if the simulator is at proper temperature and if the instrument is ready.

6. Check that the individual has been properly told of their opportunity to submit to a chemical test and has consented to take such a test. A standardized statutory rights and consent form is included in the addendum to this manual. It is suggested but not mandated that you use the standardized form.

B. VALID BREATH TEST

The mandated breath testing sequence in the Commonwealth is:

1. Air blank;
2. One adequate breath sample supplied by the defendant;
3. Air blank;
4. One calibration standard analysis, (simulator solution);
5. Air blank;
6. Second adequate breath sample supplied by the defendant;
7. Air blank.

All test results are to be expressed in two decimal mode. The defendant's breath samples must agree within +/- 0.02 BAC. The simulator test must read 0.14%, 0.15%, or 0.16%.

501 CMR 2.56 (1)(a)(b)(c) and (2).

EXAMPLE:

AIR BLANK	0.00%	0.00%	0.00%	0.00%
DEF.#1	0.21%	0.21%	0.21%	0.21%
AIR BLANK	0.00%	0.00%	0.00%	0.00%
SIMULATOR	0.15%	0.15%	0.13%	0.15%
AIR BLANK	0.00%	0.00%	0.00%	0.00%
DEF.#2	0.23%	0.24%	0.21%	DEFF
AIR BLANK	0.00%	0.00%	0.00%	0.00%

VALID INVAL INVAL INVAL

C. ADMINISTERING A BREATH TEST

1. Confirm the subject has been under observation for at least fifteen minutes.
2. Press the start test button. Follow the procedures on the proper operational procedure checklist. Allow the instrument to air blank before putting on the mouthpiece for the defendant's test.
3. Remove the defendant's mouthpiece after each defendant's test. One mouthpiece can be used for both tests.
4. Once the testing procedure is completed in accordance with the operational procedure checklist, advise the defendant to his/her right to a comparison test.

5. All valid evidentiary tests are to be placed in the Breath Test Log section of the Maintenance and Use Log.

D. VARIATIONS WHEN ADMINISTERING A BREATH TEST

1. If the defendant will only supply one breath and does not complete the breath testing sequence; fill out the refusal form. Keep the incomplete ticket and operational procedure checklist.
2. If the simulator is not 0.14%, 0.15% or 0.16%; check the simulator before retesting the subject. Check for: a) the proper temperature; b) a tight seal; c) a crack in the jar; d) a spinning propeller; or e) properly connected hose(s).
3. If the subject blows a deficient sample, allow them the opportunity to take another valid test. If the subject refuses, fill out the refusal form. Keep the incomplete test ticket and operational procedure checklist.
4. Numerous individuals with one lung have been able to complete valid tests. There is no medical exception in the G.L. for people with emphysema; only diabetics, hemophiliacs, and any other condition requiring the use of anticoagulants (blood thinning medications). Also note these medical exceptions apply only to blood tests not breath tests.
5. If a subject has a blood alcohol above a 0.20%, it is sometimes more difficult to get 0.02% agreement. This is due to variations in the individuals breath, not the

machine. In these cases, count for the same number of seconds each test and stop the test at the same count each time. Remember test records are on file at OAT to indicate the repeatability and accuracy of your instrument. Also, your periodic tests of your simulator very clearly indicate the repeatability of the instrument.

6. The argument that because the simulator is 0.14%; the subject's 0.10% is a 0.09% has no scientific validity. The variation is due to the simulator. The solution can be weak from use. The simulator might not be at proper temperature. The room air being drawn across the top of the simulator may be cool, lowering the result. What has a scientifically reliable foundation is the fact that the individual's blood alcohol as determined by his breath is approximately 9% lower than his true blood alcohol as determined by a blood sample. Remember you also report the lower of the defendant's two readings, and the instrument truncates the results.
7. If you have an air blank of anything but 0.00%, do not use the instrument.
8. If the date and/or time on the test ticket are incorrect, write the correct date and time on the ticket and initial your corrections. Notify the officer in charge that the instrument is printing the incorrect date and time. The officer in charge can make arrangements to have the battery replaced. Even if the date and time are incorrect, the

instrument can still properly quantitate an individual's blood alcohol.

VIII. REPORTING BREATH TEST RESULTS

Upon completion of a valid breath test, the test results shall be made available to the defendant and shall be recorded by the breath test operator in the breath test section of the maintenance and use log. 501 CMR 2.57. Breath test log guidelines can be found in the addendum of this manual by consulting the Maintenance and Use LogGuidelines.

If the test result is 0.10% or greater, the officer shall fill out the M.G.L. c 90 s 24 N prima facie certificate which will be presented to the court at arraignment. 501 CMR 2.57. The attachment of a copy of the operational procedure checklist and a copy of the test ticket is required in some District Courts.

All valid evidentiary tests must be submitted to the Office of Alcohol Testing via the AM BT screen in the CJIS system. M.G.L. c90 s 24K, 501 CMR 2.57.

IX. BLOOD TESTS

1. OUI ARRESTS

If a person is injured in an accident and taken to an emergency room for treatment and/or admission to the hospital, a blood sample can be requested for an OUI offense. The officer must first place the person under arrest and then ask if they would like to submit to a chemical test of their blood. If the person says no; the same sanctions apply as if the defendant had refused to take the breath test.

If the person agrees to take a blood test, the blood should be drawn in accordance with guidelines for obtaining blood found in the addendum of this manual.

The blood sample must be submitted to a certified analyst. A certified analyst would sign the 24 N form in place of the breath test operator if the results are above 0.10%. Presently, 1992, the only certified analysts in the Commonwealth are a group of chemists at the Department of State Police Crime Laboratory.

2. DEFENDANT'S INDEPENDENT BLOOD TEST

If a defendant obtains a comparison test, the test is done by a person or laboratory of the defendant's choice. The test is done at the defendant's expense. Certified analysts do no conduct comparison tests for defendants.

If a defendant voluntarily gives an officer a portion of the blood that was drawn for a comparison test, the officer can then submit the blood to the Department of State Police Crime Lab. The blood results obtained by the chemist cannot be used on the 24N form. The breath result would appear on the 24N form.

If a defendant obtains a blood test under c 263 s.5A , the analyst is one the defendant chooses. If the defendant voluntarily gives the officer a sample, it can be submitted to the Crime Lab. The results can be used as impeachment evidence.

EXAMPLE : The defendant has two tubes of blood drawn under his/her

c 263 s 5A rights. The defendant's analyst obtains a result of

0.04%. The chemist at the Crime Lab obtains a 0.14%.

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The Commonwealth of Massachusetts

Department of State Police

Office of Alcohol Testing

Metro Boston Complex

1155 Central Avenue

Needham, Massachusetts 02192

Telephone (617) 727-7827

APPROVED INFRARED BREATH TESTING INSTRUMENTS

501 CMR 2.38

The following is a list of infrared breath testing devices approved by the Office of Alcohol Testing to be used to conduct evidentiary breath tests in the Commonwealth:

COMPANY

INSTRUMENTS

CMI Inc.
a subsidiary of MPD, Inc.
316 East Ninth Street
Owensboro, KY 42301
(502) 685-6545
(800) 942-4011

Intoxilyzer 4011, 4011A,
4011 AS, 4011 ASA, 5000

Intoximeter, Inc.
1901 Locust Street
St. Louis, MO 61303
(314) 241-1158

Intoximeter 3000

National Draeger, Inc.
P.O. Box 120
101 Technology Drive
Pittsburgh, PA 15320
(412) 787-8383

Smith & Wesson Breathalyzer
2000

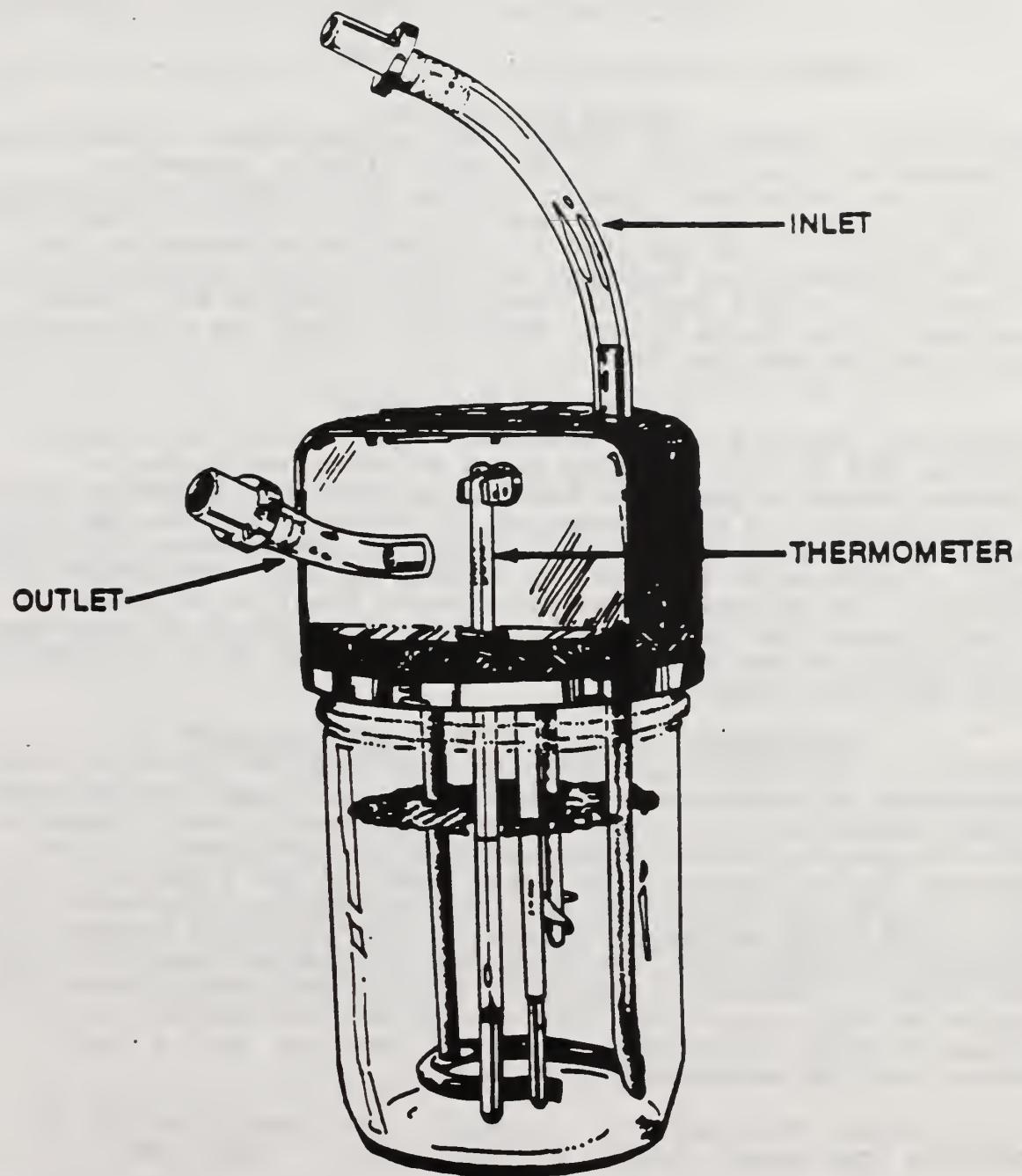
National Patent Analytical
Systems
180 Roberts Street
East Hartford, CT 06108
(800) 237-6724

BAC Verifier
DataMaster II

National Patent Analytical
Systems, Inc.
2541 Ashland Road
Mansfield, Ohio 44905
(800) 800-8143

DataMaster

REV. 6/23/92



STATUTORY RIGHTS AND CONSENT FORM

CASE NO: _____

DATE: _____

COMM v. _____

TIME: _____

RIGHTS TO A DOCTOR

GENERAL LAWS, CHAPTER 263, Section 5A, as amended: A person held in custody at a police station or other place of detention, charged with operating a motor vehicle while under the influence of intoxicating liquor shall have the right, at his request and at his expense, to be examined by a physician selected by him. The police official or designee in charge of such station or place of detention, or his designee, shall inform him of such right immediately upon being booked, and shall afford him a reasonable opportunity to exercise it.

RIGHTS TO A TELEPHONE

CHAPTER 276, SECTION 33A as amended: The police official in charge of the station or other place of detention having a telephone wherin a person is held in custody, shall permit the use of the telephone at the expense of the arrested person, for the purpose of allowing the arrested person to communicate with his family or friends, or arrange for release on bail, or engage the services of an attorney. Any such person shall be informed forthwith upon his arrival at such station or place of detention, of his right to use the telephone, and such use shall be permitted within one hour thereafter.

OPPORTUNITY TO SUBMIT TO A CHEMICAL TEST

CHAPTER 90, SECTION 24 as amended: I am going to offer you the opportunity to submit to a chemical test to determine your blood alcohol concentration. If you refuse this test, your license or right to operate in the Commonwealth of Massachusetts will be suspended by the Registrar of Motor Vehicles for a period of 120 days. If you decide to take the test and complete the test, the test results will be made available to you upon your request. Upon completion of this test, you have the right to a comparison blood test within a reasonable period of time at your own expense. The results of this comparison test can be used to restore your license or right to operate at a court hearing. Such a hearing request must be made within ten days.

DO YOU CONSENT TO SUBMIT TO A CHEMICAL TEST (BREATH/BLOOD) TO DETERMINE YOUR BLOOD ALCOHOL CONCENTRATION? YES NO

SUBJECT: _____

WITNESSED BY : _____
Police official or designee in charge of station

OFFICE OF ALCOHOL TESTING
OPERATIONAL PROCEDURE CHECKLIST
BAC VERIFIER

DEFENDANT _____

LIC. NO./DOB _____

ADDRESS _____

BREATH TEST OPERATOR _____

ARRESTING OFFICER _____

TIME FIRST OBSERVED _____

TIME OF TEST _____

DATE OF TEST _____

SIMULATOR SERIAL NO. _____

SIMULATOR SOLUTION LOT NO. _____

1. PUSH RUN BUTTON. _____
2. WHEN BLO APPEARS, HAVE SUBJECT BLOW FOR SIX TO EIGHT SECONDS. _____
3. WHEN ES APPEARS, ATTACH SIMULATOR. _____
4. WHEN PUMP STOPS, DISCONNECT SIMULATOR. _____
5. WHEN BLO APPEARS, HAVE SUBJECT BLOW FOR SIX TO EIGHT SECONDS. _____
6. WHEN STEPS 1-5 ARE COMPLETE INSTRUMENT WILL PRINT TICKET. TICKET PRINTED ONLY IF ALL FIVE STEPS ARE COMPLETED. _____

ADVISE THE DEFENDANT TO THEIR RIGHT TO A COMPARISON BLOOD TEST
AT THEIR OWN EXPENSE. RESULTS OF BLOOD TEST CAN BE USED TO
RESTORE LICENSE.

ATTACH TEST TICKET TO THIS SHEET.
REVISED 8/19/88.

DEPARTMENT OF STATE POLICE
OFFICE OF ALCOHOL TESTING

OPERATIONAL PROCEDURE CHECKLIST

BAC DATAMASTER WITH KEYBOARD

1. INSERT TICKET. _____
2. PRESS RUN ON KEYPAD ON INSTRUMENT. _____
3. ENTER ALL INFORMATION REQUESTED
THROUGH THE KEYBOARD. _____
4. INSTRUMENT WILL AIR BLANK.
HAVE SUBJECT BLOW INTO MOUTHPIECE
FOR SIX TO EIGHT SECONDS. _____
5. INSTRUMENT WILL AIR BLANK.
INSTRUMENT WILL RUN SIMULATOR.
RESULTS SHOULD BE 0.14%, 0.15%
OR 0.16%. _____
6. INSTRUMENT WILL AIR BLANK.
HAVE SUBJECT BLOW INTO MOUTHPIECE
FOR SIX TO EIGHT SECONDS. _____
7. INSTRUMENT WILL AIR BLANK AND
THEN PRINT THE TICKET.
REMOVE THE TICKET WHEN THE PRINTER
STOPS. _____

CHECK TO SEE IF IT'S A VALID EVIDENTIARY TEST.

- A. THE SUBJECT'S TWO BREATH SAMPLES AGREE WITHIN +/- 0.02
- B. THE SIMULATOR RESULT IS A 0.14%, 0.15% OR 0.16%

IF IT IS A VALID EVIDENTIARY TEST:

ADVISE THE DEFENDANT TO THEIR RIGHT TO OBTAIN A
COMPARISON BLOOD TEST AT THEIR OWN EXPENSE.
RESULTS OF THE BLOOD TEST CAN BE USED TO RESTORE
THEIR LICENSE AT A HEARING.

ATTACH THE BREATH TEST TICKET TO THIS SHEET.
REVISED: 7/31/92

OFFICE OF ALCOHOL TESTING
OPERATIONAL PROCEDURE CHECKLIST
DATAMASTER II

BREATH TEST OPERATOR _____

TIME FIRST OBSERVED _____

TIME OF TEST _____

DATE OF TEST _____

SIMULATOR SERIAL NO. _____

SIMULATOR LOT NO. _____

1. INSERT TICKET. PUSH RUN BUTTON. _____
2. ENTER DATA REQUIRED BY KEYBOARD. _____
3. AIR BLANK. HAVE SUBJECT BLOW FOR SIX TO EIGHT SECONDS. _____
4. AIR BLANK. SIMULATOR TEST RUNS AUTOMATICALLY. _____
5. AIR BLANK. HAVE SUBJECT BLOW FOR SIX TO EIGHT SECONDS. _____
6. AIR BLANK. TICKET IS PRINTED. _____

ADVISE THE DEFENDANT OF THEIR RIGHT TO A COMPARISON TEST AT THEIR OWN EXPENSE. RESULTS OF THE BLOOD TEST CAN BE USED TO RESTORE THEIR LICENSE.

ATTACH TEST TICKET.

REVISED 8/27/92

OFFICE OF ALCOHOL TESTING
OPERATIONAL PROCEDURE CHECKLIST
INTOXILYZER 5000

DEFENDANT _____

LIC. NO./DOB _____

ADDRESS _____

BREATH TEST OPERATOR _____

ARRESTING OFFICER _____

TIME FIRST OBSERVED _____

TIME OF TEST _____

DATE OF TEST _____

SIMULATOR SERIAL NO. _____

SIMULATOR SOLUTION LOT NO. _____

1. PUSH BUTTON TO START TEST. _____
2. INSERT TICKET. _____
3. BLOW INTO MOUTHPIECE TILL THE TONE STOPS.
HAVE SUBJECT BLOW FOR SIX TO EIGHT SECONDS. _____
4. SIMULATOR TEST RUN BY MACHINE. _____
5. BLOW INTO MOUTHPIECE TILL THE TONE STOPS.
HAVE SUBJECT BLOW FOR SIX TO EIGHT SECONDS. _____
6. WHEN PRINTER STOPS, REMOVE TICKET. _____

ADVISE THE DEFENDANT TO THEIR RIGHT TO A COMPARISON BLOOD TEST
AT THEIR OWN EXPENSE. RESULTS OF BLOOD TEST CAN BE USED TO
RESTORE LICENSE.

ATTACH TEST TICKET TO THIS SHEET.
REVISED 8/19/88.

DEPARTMENT OF PUBLIC SAFETY
OFFICE OF ALCOHOL TESTING

OPERATIONAL PROCEDURE CHECKLIST
INTOXILYZER 5000 WITH KEYBOARD

1. PUSH BUTTON TO START TEST. _____
2. INSERT TICKET. _____
3. ENTER ALL INFORMATION REQUESTED
THROUGH THE KEYBOARD. _____
4. INSTRUMENT WILL AIR BLANK.
HAVE SUBJECT BLOW INTO MOUTHPIECE
FOR SIX TO EIGHT SECONDS. _____
5. INSTRUMENT WILL AIR BLANK.
INSTRUMENT WILL RUN SIMULATOR.
RESULTS SHOULD BE 0.14%, 0.15%
OR 0.16%. _____
6. INSTRUMENT WILL AIR BLANK.
HAVE SUBJECT BLOW INTO MOUTHPIECE
FOR SIX TO EIGHT SECONDS. _____
7. INSTRUMENT WILL AIR BLANK AND
THEN PRINT THE TICKET.
REMOVE THE TICKET WHEN THE PRINTER
STOPS. _____

CHECK TO SEE IF IT'S A VALID EVIDENTIARY TEST.

- A. THE SUBJECT'S TWO BREATH SAMPLES AGREE WITHIN +/- 0.02
- B. THE SIMULATOR RESULT IS A 0.14%, 0.15% OR 0.16%

IF IT IS A VALID EVIDENTIARY TEST:

ADVISE THE DEFENDANT TO THEIR RIGHT TO OBTAIN A
COMPARISON BLOOD TEST AT THEIR OWN EXPENSE.
RESULTS OF THE BLOOD TEST CAN BE USED TO RESTORE
THEIR LICENSE AT A HEARING.

ATTACH THE BREATH TEST TICKET TO THIS SHEET.
REVISED: 9/4/91

attach ticket here

DEPARTMENT OF PUBLIC SAFETY
OFFICE OF ALCOHOL TESTING
OPERATIONAL PROCEDURE CHECKLIST

FOR MASSACHUSETTS STATE POLICE'S
INTOXILYZER 5000 WITH KEYBOARD

1. PUSH BUTTON TO START TEST. _____
2. INSERT TICKET. _____
3. ENTER ALL INFORMATION REQUESTED
THROUGH THE KEYBOARD. _____
4. INSTRUMENT WILL AIR BLANK.
HAVE SUBJECT BLOW INTO MOUTHPIECE
FOR SIX TO EIGHT SECONDS. _____
5. INSTRUMENT WILL AIR BLANK.
INSTRUMENT WILL RUN SIMULATOR.
RESULTS SHOULD BE 0.14%, 0.15%
OR 0.16%. _____
6. INSTRUMENT WILL AIR BLANK.
HAVE SUBJECT BLOW INTO MOUTHPIECE
FOR SIX TO EIGHT SECONDS. _____
7. INSTRUMENT WILL AIR BLANK AND
THEN PRINT THE TICKET.
REMOVE THE TICKET WHEN THE PRINTER
STOPS. _____

CHECK TO SEE IF IT'S A VALID EVIDENTIARY TEST.

- A. THE SUBJECT'S TWO BREATH SAMPLES AGREE WITHIN +/- 0.02
- B. THE SIMULATOR RESULT IS A 0.14%, 0.15% OR 0.16%

IF IT IS A VALID EVIDENTIARY TEST:

ADVISE THE DEFENDANT TO THEIR RIGHT TO OBTAIN A
COMPARISON BLOOD TEST AT THEIR OWN EXPENSE.
RESULTS OF THE BLOOD TEST CAN BE USED TO RESTORE
THEIR LICENSE AT A HEARING.

ATTACH THE BREATH TEST TICKET TO THIS SHEET.

REVISED: 9/4/91

OAT APPROVED FOR MSP: 3/10/92

OFFICE OF ALCOHOL TESTING
OPERATIONAL PROCEDURE CHECKLIST
INTOXIMETER 3000

DEFENDANT _____

LIC. NO./DOB _____

ADDRESS _____

BREATH TEST OPERATOR _____

ARRESTING OFFICER _____

TIME FIRST OBSERVED _____

TIME OF TEST _____

DATE OF TEST _____

SIMULATOR SERIAL NO. _____

SIMULATOR SOLUTION LOT NO. _____

1. PRESS START. ENTER DATA REQUESTED BY
KEYBOARD. _____
2. INSTRUMENT WILL AIR BLANK. _____
3. SCREEN SAYS SUBJECT BLOW .
SUBJECT SHOULD BLOW TILL * APPEARS. _____
5. ANALYZING APPEARS. _____
6. AIR BLANK RUN. XST APPEARS. SIMULATOR
AUTOMATICALLY RUN. _____
7. ANALYZING APPEARS. AIR BLANK RUN. _____
8. SCREEN SAYS SUBJECT BLOW.
MAKE DEFENDANT BLOW AGAIN TILL * APPEARS. _____
9. AFTER ANALYZING, AIR BLANK IS RUN.
REMOVE TICKET. _____

ADVISE THE DEFENDANT TO THEIR RIGHT TO A COMPARISON BLOOD TEST
AT THEIR OWN EXPENSE. RESULTS OF THE BLOOD TEST CAN BE USED TO
RESTORE THEIR LICENSE.

ATTACH TEST TICKET TO THIS SHEET.
REVISED 8/27/92.

OFFICE OF ALCOHOL TESTING
OPERATIONAL PROCEDURE CHECKLIST
SMITH & WESSON 2000

DEFENDANT _____

LIC. NO./DOB _____

ADDRESS _____

BREATH TEST OPERATOR _____

ARRESTING OFFICER _____

TIME FIRST OBSERVED _____

TIME OF TEST _____

DATE OF TEST _____

SIMULATOR SERIAL NO. _____

SIMULATOR SOLUTION LOT NO. _____

1. INSERT TICKET APPEARS. INSERT TICKET. _____
2. READY APPEARS, PUSH START TEST. 8.88
APPEARS AND THE INSTRUMENT PURGES. _____
3. BLANK READ APPEARS, 0.00 . _____
4. BLOW SAMPLE APPEARS. HAVE DEFENDANT BLOW
FOR 6 TO 8 SECONDS. _____
5. ANALYZING APPEARS. RESULTS RECORDED ON
TICKET AND READOUT. _____
6. INSTRUMETN RECYCLES. BLOW SAMPLE APPEARS,
HOOK UP SIMULATOR AND PRESS START TEST
BUTTON. RESULTS ARE RECORDED. _____
7. DISCONNECT SIMULATOR. _____
8. INSTRUMENT RECYCLES. BLOW SAMPLE APPEARS.
MAKE DEFENDANT BLOW AGAIN FOR 6 TO 8 SECONDS. _____
9. AFTER ANALYZE, RESULTS ARE RECORDED.
REMOVE TICKET. _____

ADVISE THE DEFENDANT TO THEIR RIGHT TO A COMPARISON BLOOD TEST
AT THEIR OWN EXPENSE. RESULTS OF BLOOD TEST CAN BE USED TO
RESTORE LICENSE.

ATTACH TEST TICKET TO THIS SHEET.
REVISED 8/19/88.



The Commonwealth of Massachusetts

Department of State Police

Office of Alcohol Testing

Metro Boston Complex

1155 Central Avenue

Needham, Massachusetts 02192

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MAINTENANCE AND USE LOG GUIDELINES

The breath test log shall be placed by the infrared breath testing instrument at all times. Completed pages from each section of the log may be removed by the officer in charge and placed in a secure area. Pages to this log are to be kept for a minimum of two years and shall be available to the Office of Alcohol Testing at all times.

SECTION 1. BREATH TEST LOG

1. All evidentiary tests must be entered in the breath test log.
2. All entries are to be made by the officer administering the test.
3. Instrument serial numbers are printed on the breath test ticket.

SECTION 2. MAINTENANCE AND REPAIR LOG

1. All service to the instrument(s) should be noted in the maintenance and use log. Please have the log available so service technicians can make the appropriate entries.

SECTION 3. CALIBRATION RECORD LOG

1. Each time the simulator solution is changed a calibration record must be completed.
2. The simulator solution must be tested five times and the corresponding results noted on the calibration record.
3. Solution lot number can be found on the bottle of simulator solution.
4. Attach tickets to the calibration record.

revised 06/02/88



The Commonwealth of Massachusetts
Department of State Police
Office of Alcohol Testing

Metro Boston Complex

1155 Central Avenue

Needham, Massachusetts 02192

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SIMULATOR SOLUTION

THE FOLLOWING IS A LIST OF RULES IN ACCORDANCE WITH 501 CMR 2.43
FOR THE STORAGE, HANDLING AND REPLACEMENT OF SIMULATOR SOLUTION.

STORAGE

1. All solution shall be stored in their sealed containers in a cool, dry place away from direct heat.
2. Solution can only be used until its expiration date which is noted on the bottle's label.

HANDLING

1. Prior to using any new simulator solution, the simulator container should be rinsed with water and dried thoroughly.
2. A record of the simulator solution lot number shall be kept and made available to all certified operators administering evidentiary test.
3. All solution is to be heated to 34 C prior to testing.

REPLACEMENT

1. Simulator solution will be available at State Police barracks whenever needed. Solution is shipped monthly by OAT. Location of solution pickup has been designated by each department's officer in charge. Location of pickup can be changed at any time by contacting OAT. Any department can pick up solution at any time from any barracks, excluding E-H, even if it is not their designated location.
2. 0.15% simulator solution should be replaced when three consecutive readings of 0.14% are recorded. Failure to change the solution at this time does not invalidate any additional tests with a 0.14% simulator reading.
3. Simulator solution must be changed when it reaches its expiration date.

revised 06/02/88

OFFICE OF ALCOHOL TESTING

BREATH TEST LOG

LOCATION

OFFICE OF ALCOHOL TESTING
MAINTENANCE AND REPAIR LOG

Sample

OFFICE OF ALCOHOL TESTING

CALIBRATION RECORD

LOCATION STATE POLICE MIDDLEBOROOPERATOR TPR. JOHN P. JAKOBOWSKI BADGE / ID# 1897SIMULATOR SERIAL NUMBER 111222SIMULATOR SOLUTION LOT # 1234SIMULATOR SOLUTION EXPIRATION DATE 7-1-92INSTRUMENT SERIAL # 66-003004

SIMULATOR TEST RESULTS:

1. .148
2. .148
3. .148
4. .148
5. .148

"Sample"Solution Changeonly
—
—

ATTACH TICKETS BELOW.

A-HEADQUARTERS
 INTOXILYZER - ALCOHOL ANALYZER
 MA MODEL 3900 SH 66-003004
 05/01/92

TEST	%BAC	TIME
AIR BLANK	.00	12:56
CAL. CHECK	.14	12:56
AIR BLANK	.00	12:56
CAL. CHECK	.14	12:57
AIR BLANK	.00	12:57
CAL. CHECK	.14	12:58
AIR BLANK	.00	12:58
CAL. CHECK	.14	12:59
AIR BLANK	.00	12:59
CAL. CHECK	.14	12:59
AIR BLANK	.00	13:00

Simulator 34°cTPR. JOHN P. JAKOBOWSKI 1897

A-17

Monthly Cal Test 5-1-92

COMMONWEALTH OF MASSACHUSETTS
PRIMA FACIE CERTIFICATION: TEST OF BREATH OR BLOOD (G.L. c. 90, §24N)

PENDANT: _____ D.O.B.: _____ SEX: _____

ADDRESS: _____ SOC. SEC.#: _____

LIC. CLASS: _____ LIC.#: _____ STATE: _____ EXP. DATE: _____

I, _____, state under pains and penalties of perjury that on _____ (Date) _____ (Time) _____ (Location of Arrest) I arrested the above defendant for operating a motor vehicle in violation of G.L. c.90, §24, 24G, or 24L; said offense alleged to have taken place on: _____ (Location of Offense - Street and Town)

(Signature of Arresting Officer) _____ (Police Department) _____

.....
I, _____, hereby state under pains and penalties of perjury that:

I administered a chemical test or analysis of: (check one)

the defendant's breath

a sample of blood identified as that of the defendant;

I am trained and certified in the administration of such tests;

The test was performed in accordance with regulations and standards promulgated by the secretary of public safety;

The equipment used for such test was regularly serviced and maintained;

I have every reason to believe the equipment was functioning properly at the time the test was administered;

Such test was administered on (Date) _____ at (Time) _____;

The result of such test or analysis of the percentage, by weight of alcohol in the defendant's blood was _____ / _____ / _____
(1st) / (Std.) / (2nd)

(Signature of Certified Operator or Analyst) (Date) _____

.....

COURT'S SUSPENSION OF LICENSE

I find that the prosecution has made the prima facie showing required by G.L. c.90, §24N, and therefore ORDER the defendant's (circle one) license/right to operate suspended until the disposition of the offense for which the defendant is being prosecuted, but in no event for more than 90 days.

A TRUE COPY ATTEST:

(Signature of Justice) (Date) (Time) (Court) (Clerk-Magistrate)

G.L. c.90, §24N Hearing: Restored _____ Not Restored _____ (Date) _____
- - - - - (FOR PROSECUTOR'S USE ONLY) - - - - -
Final Disposition: _____ (Date) _____

R.M.V. Notified: Arraignment _____ §24N Hearing _____ Final Disp. _____

GUIDELINES FOR DRAWING AND SUBMITTING BLOOD SAMPLES

If a person is injured in an accident and taken to a medical facility licensed under the provisions of M.G.L. c 111 s 51 and has consented to a blood test, the following guidelines should be followed. No one with hemophilia, diabetes, or any other condition requiring use of anticoagulants shall be deemed to have consented to the withdrawal of blood.

1. The sample must be drawn by a medical doctor, a registered nurse, or a certified medical technician. (M.D., R.N., C.M.T.).
2. Ask for two tubes of blood containing a powdered anticoagulant. (5-10 ml per tube). Grey, purple, blue or green stoppers indicate anticoagulants. Red stoppered test tubes do not contain anticoagulants. Tell the medical person that the sample is to be tested for alcohol so the area will be sterilized with a nonalcohol solution.
3. Refrigerate the sample until it can be delivered to a certified analyst. Do not freeze the sample.
4. Keep a continuity sheet on the evidence.
5. Any questions on these guidelines can be addressed to the Office of Alcohol Testing.

DEPARTMENT OF STATE POLICE
OFFICE OF ALCOHOL TESTING
1155 CENTRAL AVENUE
NEEDHAM, MA 02192

SERUM CONVERSION CHART

You can use this conversion chart if you have a serum alcohol result on a defendant that you want to convert to a blood alcohol level as expressed in G.L. c.90 s 24N. If the result is in expressed in mg/dl look in the left hand column labeled Serum Alcohol Level for your result. The corresponding blood alcohol level for the average individual would be in the corresponding right hand column. This chart gives you the average blood alcohol and does not attempt to give you the possible high and low alcohol levels due to the water content of the defendant's blood.

SERUM ALCOHOL LEVEL	BLOOD ALCOHOL LEVEL
057-067 MG/DL	0.05%
068-078 MG/DL	0.06%
079-090 MG/DL	0.07%
091-101 MG/DL	0.08%
102-112 MG/DL	0.09%
113-124 MG/DL	0.10%
125-135 MG/DL	0.11%
136-147 MG/DL	0.12%
148-158 MG/DL	0.13%
159-169 MG/DL	0.14%
170-181 MG/DL	0.15%

SERUM ALCOHOL LEVEL	BLOOD ALCOHOL LEVEL
182-192 MG/DL	0.16%
193-204 MG/DL	0.17%
205-215 MG/DL	0.18%
216-226 MG/DL	0.19%
227-238 MG/DL	0.20%
239-249 MG/DL	0.21%
250-261 MG/DL	0.22%
262-272 MG/DL	0.23%
273-283 MG/DL	0.24%
284-295 MG/DL	0.25%
296-306 MG/DL	0.26%
307-318 MG/DL	0.27%
319-329 MG/DL	0.28%
330-340 MG/DL	0.29%
341-352 MG/DL	0.30%

(3) Where the license or right to operate of any person has been revoked under paragraph (b) and such person has been previously convicted or assigned to an alcohol education or rehabilitation program because of a like offense by a court of the commonwealth two times within a period of six years preceding the date of commission of the offense for which he has been convicted or where the license or right to operate has been revoked pursuant to section twenty-three due to a violation of said section due to a prior revocation under paragraph (b) or under section twenty-four D or twenty-four E, the registrar shall not restore the license or reinstate the right to operate to such person, unless the prosecution of such person has terminated in favor of the defendant, until five years after the date of conviction; provided, however, that such person may, after the expiration of two years from the date of conviction, apply for and shall be granted a hearing before the registrar for the purpose of requesting the issuance of a new license on a limited basis on the grounds of hardship and a showing by the person that the causes of the present and past violations have been dealt with or brought under control and the registrar may, in his discretion, issue such a license under such terms and conditions as he deems appropriate and necessary. An appeal to the superior court may be had, in accordance with the provisions of chapter thirty A, from any order of the registrar of motor vehicles under the provisions of this section.

(3A) Where the license or the right to operate of a person has been revoked under paragraph (b) and such person has been previously convicted of or assigned to an alcohol education or rehabilitation program by a court of the commonwealth because of a like violation three or more times within a period of six years preceding the date of the commission of the offense for which such person has been convicted, the registrar shall not restore the license or reinstate the right to operate of such person unless the prosecution of such person has terminated in favor of the defendant, until ten years after the date of the conviction; provided, however, that such person may, after the expiration of five years from the date of conviction, apply for and shall be granted a hearing before the registrar for the purpose of requesting the issuance of a new license on a limited basis on the grounds of hardship and a showing by the person that the causes of the present and past violations have been dealt with or brought under control and the registrar may, in his discretion, issue such a license under such terms and conditions as he deems appropriate and necessary.

(4) Notwithstanding the foregoing, no new license shall be issued or right to operate be reinstated by the registrar to any person convicted of a violation of subparagraph (1) of paragraph (a) until ten years after the date of conviction in case the registrar determines upon investigation and after hearing that the action of the person so convicted in committing such offense caused an accident resulting in the death of another, nor at any time after a subsequent conviction of such an offense, whenever committed, in case the registrar determines in the manner aforesaid that the action of such person, in committing the offense of which he was so subsequently convicted, caused an accident resulting in the death of another.

(d) For the purposes of subdivision (1) of this section, a person shall be deemed to have been convicted if he pleaded guilty or nolo contendere or was found or adjudged guilty by a court of competent jurisdiction, whether or not he was placed on probation without sentence or under a suspended sentence or the case was placed on file, and a license may be revoked under paragraph (b) hereof notwithstanding the pendency of a prosecution upon appeal or otherwise after such a conviction. Where there has been more than one conviction in the same prosecution, the date of the first conviction shall be deemed to be the date of conviction under paragraph (c) hereof.

(e) In any prosecution for a violation of paragraph (a) of this subdivision, evidence of the percentage, by weight, of alcohol in the defendant's blood at the time of the alleged offense, as shown by chemical test or analysis of his blood or as indicated by chemical test analysis of his breath, shall be admissible and deemed relevant to the determination of the question of whether such defendant was at such time under the influence of intoxicating liquor; provided, however, that if such test or analysis was made by or at the direction of a police officer, it was made with the consent of the defendant, the results thereof were made available to him upon his request, and the defendant was afforded a reasonable opportunity, at his request and at his expense, to have another such test or

analysis made by a person or physician selected by him; and provided, further, that blood shall not be withdrawn from any party for the purpose of such test or analysis except by a physician, registered nurse or certified medical technician. Evidence that the defendant failed or refused to consent to such test or analysis shall not be admissible against him in a civil or criminal proceeding, but shall be admissible in any action by the registrar under paragraph (f). When there is no evidence presented at a civil or criminal proceeding of the percentage, by weight, of alcohol in the defendant's blood, the presiding judge at a trial before a jury shall include in his instructions to the jury a statement of an arresting officer's responsibilities upon arrest of a person suspected to be operating a motor vehicle under the influence of alcohol and a statement: that a blood alcohol test may only be administered with a person's consent; that a person has a legal right to take or not take such a test; that there may be a number of reasons why a person would not take such a test; that there may be a number of reasons why such a test was not administered; that there shall be no speculation as to the reason for the absence of a test and no inference can be drawn from the fact that there was no evidence of a blood alcohol test; and that a finding of guilty or not guilty must be based solely on the evidence that was presented in the case. If such evidence is that such percentage was five one-hundredths or less, there shall be a presumption that such defendant was not under the influence of intoxicating liquor, and he shall be released from custody forthwith, but the officer who placed him under arrest shall not be liable for false arrest, if such police officer had reasonable grounds to believe that the person arrested had been operating a motor vehicle upon any such way or place while under the influence of intoxicating liquor; if such evidence is that such percentage was more than five one-hundredths but less than ten one-hundredths, there shall be no presumption; and if such evidence is that such percentage was ten one-hundredths or more, there shall be a presumption that such defendant was under the influence of intoxicating liquor. A certificate, signed and sworn to, by a chemist of the department of public safety or by a chemist of a laboratory certified by said department, which contains the results of an analysis made by such chemist of the percentage of alcohol in such blood shall be *prima facie* evidence of the percentage of alcohol in such blood.

(f) Whoever operates a motor vehicle upon any way or in any place to which the public has right to access, or upon any way or in any place to which the public have access as invitees or licensees, shall be deemed to have consented to submit to a chemical test or analysis of his breath or blood in the event that he is arrested for operating a motor vehicle while under the influence of intoxicating liquor; provided, that no person shall be deemed to have consented to a blood test unless such person has been brought for treatment to a medical facility licensed under the provisions of section fifty-one of chapter one hundred and eleven; and provided, further, that no person who is afflicted with hemophilia, diabetes or any other condition requiring the use of anticoagulants shall be deemed to have consented to a withdrawal of blood. Such test shall be administered at the direction of a police officer, as defined in section one of chapter ninety C, having reasonable grounds to believe that the person arrested has been operating a motor vehicle upon such way or place while under the influence of intoxicating liquor. If the person arrested refuses to submit to such test or analysis, after having been informed that his license or permit to operate motor vehicles or right to operate motor vehicles in the commonwealth shall be suspended for a period of one hundred and twenty days for such refusal, no such test or analysis shall be made, but the police officer before whom such refusal was made shall immediately prepare a written report of such refusal. Such written report of refusal shall be endorsed by a third person who shall have witnessed such refusal. Each such report shall be made on a form approved by the registrar, and shall be sworn to under the penalties of perjury by the police officer before whom such refusal was made. Each such report shall set forth the grounds for the officer's belief that the person arrested had been driving a motor vehicle on any such way or place while under the influence of intoxicating liquor, and shall state that such person had refused to submit to such chemical test or analysis when requested by such police officer to do so. Each such report shall be endorsed by the police chief, as defined in section one of chapter ninety C, or by the person authorized by him and shall be sent forthwith to the registrar. Upon receipt of such report, the registrar shall suspend any license or permit to operate motor vehicles issued to such person under this chapter or the right of such person to

operate motor vehicles in the commonwealth under section ten for a period of one hundred and twenty days.

(g) Any person whose license, permit or right to operate has been suspended under paragraph (f) shall be entitled to a hearing before the registrar which shall be limited to the following issues: (1) did the police officer have reasonable grounds to believe that such person had been operating a motor vehicle while under the influence of intoxicating liquor upon any way or in any place to which the public has a right of access or upon any way or in any place to which members of the public have a right of access as invitees or licensees, (2) was such person placed under arrest, and (3) did such person refuse to submit to such test or analysis. If, after such hearing, the registrar finds on any one of the said issues in the negative, the registrar shall reinstate such license, permit or right to operate.

(h) Any person convicted of a violation of subparagraph (1) of paragraph (a) that involves operating a motor vehicle while under the influence of marihuana, narcotic drugs, depressants or stimulant substances, all as defined in section one of chapter ninety-four C, or the vapors of glue, may, as part of the disposition in the case, be ordered to participate in a driver education program or a drug treatment or drug rehabilitation program, or any combination of said programs. The court shall set such financial and other terms for the participation of the defendant as it deems appropriate.

(2)(a) Whoever upon any way or in any place to which the public has a right of access, or any place to which members of the public have access as invitees or licensees, operates a motor vehicle recklessly, or operates such a vehicle negligently so that the lives or safety of the public might be endangered, or upon a bet or wager or in a race, or whoever operates a motor vehicle for the purpose of making a record and thereby violates any provision of section seventeen or any regulation under section eighteen, or whoever without stopping and making known his name, residence and the register number of his motor vehicle goes away after knowingly colliding with or otherwise causing injury to any other vehicle or property, or whoever loans or knowingly permits his license or learner's permit to operate motor vehicles to be used by any person, or whoever makes false statements in an application for such a license or learner's permit, or whoever knowingly makes any false statement in an application for registration of a motor vehicle, shall be punished by a fine of not less than twenty dollars nor more than two hundred dollars or by imprisonment for not less than two weeks nor more than two years, or both; and whoever uses a motor vehicle without authority knowing that such use is unauthorized shall, for the first offense be punished by a fine of not less than fifty dollars nor more than five hundred dollars or by imprisonment for not less than thirty days nor more than two years, or both, and for a second offense by imprisonment in the state prison for not more than five years or in a house of correction for not less than thirty days nor more than two and one half years, or by a fine of not more than one thousand dollars, or by both such fine and imprisonment; and whoever is found guilty of a third or subsequent offense of such use without authority committed within five years of the earliest of his two most recent prior offenses shall be punished by a fine of not less than two hundred dollars nor more than one thousand dollars or by imprisonment for not less than six months nor more than two and one half years in a house of correction or for not less than two and one half years nor more than five years in the state prison or by both fine and imprisonment. A summons may be issued instead of a warrant for arrest upon a complaint for a violation of any provision of this paragraph if in the judgment of the court or justice receiving the complaint there is reason to believe that the defendant will appear upon a summons.

(a 1/2) (1) Whoever operates a motor vehicle upon any way or in any place to which the public has right of access, or upon any way or in any place to which members of the public shall have access as invitees or licensees, and without stopping and making known his name, residence and the registration number of his motor vehicle, goes away after knowingly colliding with or otherwise causing injury to any person not resulting in the death of any person, shall be punished by imprisonment for not less than six months nor

